INSTALLATION AND OPERATING INSTRUCTIONS FOR STROMBERG-CARLSON No. 325 RADIO RECEIVERS

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
Rochester, New York,

INTRODUCTION

The Stromberg-Carlson, No. 325 Receiver is a five tube, instantaneous "Electric Tuning", superheterodyne receiver. The electric tuning arrangement is operative only in the Standard Broadcast range; when operating in the Short-Wave range, the electric tuning arrangement is made inoperative. When it is desired to receive stations located in the Standard Broadcast range, either manual or electric tuning is easily obtainable by simply rotating the range switch control knob so that the arrow on the knob points in the direction of the designation for the desired type of tuning. See **Figure 1.**

The station selecting push buttons for electric tuning are mounted vertically at the right-hand side of the front panel as shown in Figure 1. In some furniture models the station selecting push buttons are mounted horizontally near the top of the front panel. The circuit is arranged so that six

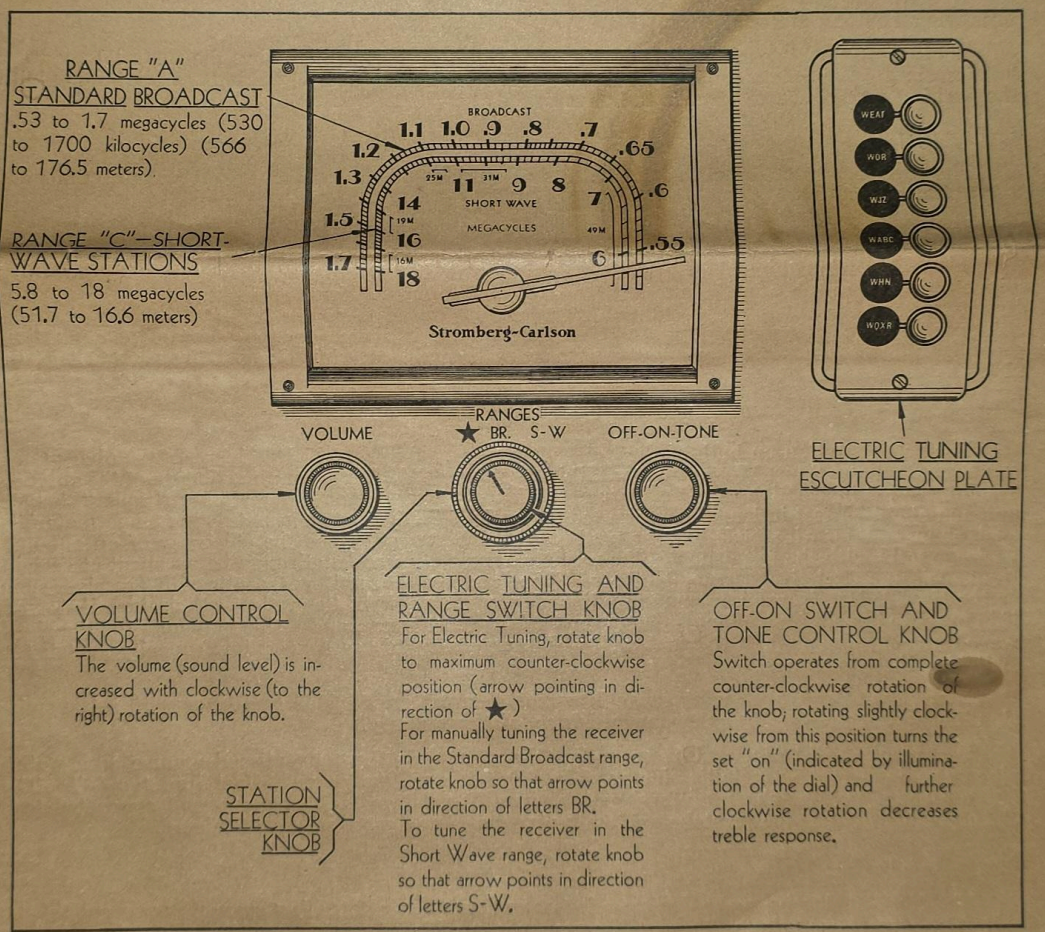
RANGE "A" STANDARD BROADCAST
.53 to 1.7 megacycles (530 to 1700 kilocycles) (566 to 176.5 meters).
RANGE "C"—SHORT-WAVE STATIONS
5.8 to 18 megacycles (51.7 to 16.6 meters)
BROADCAST
SHORT WAVE
MEGACYCLES
Stromberg-Carlson
WEAF
WOR
WJZ
WABC
WHN
WOXR
ELECTRIC TUNING ESCUTCHEON PLATE
VOLUME
RANGES
BR. S-W
OFF-ON-TONE
VOLUME CONTROL KNOB
The volume (sound level) is increased with clockwise (to the right) rotation of the knob.
STATION SELECTOR KNOB
ELECTRIC TUNING AND RANGE SWITCH KNOB
For Electric Tuning, rotate knob to maximum counter-clockwise position (arrow pointing in direction of ★)
For manually tuning the receiver in the Standard Broadcast range, rotate knob so that arrow points in direction of letters BR.
To tune the receiver in the Short Wave range, rotate knob so that arrow points in direction of letters S-W.
OFF-ON SWITCH AND TONE CONTROL KNOB
Switch operates from complete counter-clockwise rotation of the knob; rotating slightly clockwise from this position turns the set "on" (indicated by illumination of the dial) and further clockwise rotation decreases treble response.

Fig. 1. Location and Operation of Controls.

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favorite stations located in the Standard Broadcast range may be set up. **(Local and other stations that give the best daytime and evening service should be selected.)** To properly set up the electric tuning arrangement for the six favorite broadcast stations, read the section, "Instructions for Setting Up the Electric Tuning Arrangement", appearing on page 3 of these instructions.

This receiver is equipped with two tuning ranges which are quickly interchangeable by means of a rotary switch whose control knob is located on the front panel. A visual check as to which range is in operation is easily obtainable by the arrow on the range switch control knob. Ease and convenience of operation are assured by the large drive and illuminated dial with large clear markings. The dial lamp circuit is arranged so that the dial is illuminated only when the Range Switch control knob is set to the manual tuning Standard Broadcast or the Short Wave ranges. When using the electric tuning arrangement the dial is not illuminated. The two tuning ranges are as follows:

Range A—530 to 1700 kilocycles (.53 to 1.7 megacycles) (566 to 176.5 meters)

Range C—5800 to 18,000 kilocycles (5.8 to 18 megacycles) (51.7 to 16.6 meters)

The locations of the 16, 19, 31, and 49 meter short-wave broadcast bands are indicated by designations on the dial.

INSTALLATION

Removing Packing Material

Remove all packing material from the inside of the cabinet, including the material used for holding the tubes in place during shipment. Preserve all this special packing material along with the packing case if this receiver is to be reshipped at any future date.

LOCATION

The receiver should be placed so that it will be near the antenna and ground connections and to an electrical outlet.

TUBES

This receiver is equipped with the same tubes with which it was tested at the factory and is shipped with these tubes in their respective sockets. Before making connections to the power supply circuit, and the antenna and ground, it is desirable to examine the tubes to be sure that they all are securely in their sockets and that the grid clips are in place. In the event of any questions regarding the proper location of the tubes, consult the tube location diagram on the back of the chassis.

Antenna and Ground

For best reception on both of the ranges covered by the No. 325 Receiver, a Stromberg-Carlson Broadcast and Short Wave Antenna Kit is recommended. For proper installation of the antenna system, see the instructions accompanying each kit. For good practical results a simple "L" type antenna about 75 feet in length can be used for both of the tuning ranges. Good antenna materials such as insulators, wire, etc., must be used to secure best results. As the efficiency of an antenna varies greatly with the frequency of the received waves, a given length may be excellent at certain frequencies and relatively poor at others. Therefore, to secure uniform results with a receiver such as the No. 325 Receiver, an antenna of adjustable length would be theoretically desirable. However, if in practice it is desired, a long antenna for the broadcast range, and a short antenna for the short wave range may be used. If this is done it will be necessary to use a good low capacity switch for switching these antennas.

Do not use the short wave tuning range in conjunction with a shielded lead-in or with a transmission line system designed for the standard broadcast range only.

Best results will be insured by grounding the receiver in the conventional manner to a water-pipe or radiator or to a metallic pipe or stake driven from five to eight feet into the soil. The ground lead should be short, preferably not more than fifteen feet in length and connected to a clean portion of the pipe or stake surface by means of an approved ground clamp.

Power Supply

The No. 325 Receivers are designed for operation on an alternating current power supply circuit. The correct operating voltage and frequency is specified for each receiver. Therefore, before

connecting the receiver to the house lighting circuit, examine the marking label inside of the cabinet in order to be sure that the receiver is the correct one for use on the particular local power supply circuit. **The connection to the power supply circuit should be made after the antenna and ground leads are connected.**

INSTRUCTIONS FOR SETTING UP ELECTRIC TUNING ARRANGEMENT

1. Before proceeding to set up stations for electric tuning, the radio receiver should be turned "on" for approximately twenty to thirty minutes. See Figure 1.
2. Set the Range Switch control knob to the proper position for the "Standard Broadcast" range (arrow on knob pointing in direction of letters BR.).
3. Remove the list of station letters from the P-28976 package assembly which is tacked inside of the cabinet.
4. Remove the two screws which hold the electric tuning escutcheon plate to the cabinet. See Figure 1.
5. From the lists of stations, remove the call letters of the six stations which it is desired to set up for electric tuning. **These six stations should preferably be selected and set up in the daytime so that the best service will be obtained at all times.**

   CAUTION: Each button adjustment for electric tuning has assigned frequency limits. These limits are designated for each adjustment on the cover plate, which covers the electric tuning adjusting capacitors (visible when the electric tuning escutcheon plate is removed from the cabinet). The six stations should be selected so that the frequency of each station will be within the assigned frequency limits of its associated push button.

   It will be noted that the station letters are printed on partially cut circles to facilitate ease in removing the desired station letters. In setting up these six favorite stations, the following order should be followed:

   Looking at the front of the receiver of those cabinets where the electric tuning escutcheon plate and push buttons are mounted vertically at the right-hand side of the front panel, the station letters of the station having the highest frequency should be inserted into the lowest circle of the escutcheon plate. See Figure 1. Of those cabinets where the electric tuning escutcheon plate and push buttons are mounted horizontally near the top of the front panel, the station letters of the station having the highest frequency should be inserted into the farthest left-hand circle of the escutcheon plate. Then, in successive order, according to frequency, insert the station letters of the remaining five stations into the other five circles of the electric tuning escutcheon plate; the station letters of the station having the lowest frequency being inserted into the uppermost circle of the escutcheon plate of those cabinets where this plate is mounted vertically on the front panel or in the farthest right-hand circle of the escutcheon plate of those cabinets where this plate is mounted horizontally on the front panel.

   The tuning adjustments for the six favorite stations can now be made, starting with the station having the highest frequency and proceeding as follows:

6. With the receiver turned "on" and the Range Switch control knob set to the Standard Broadcast position (arrow on knob pointing in direction of letters BR.), tune the receiver in the conventional manner, by means of the Station Selector knob, to that station (of the six chosen for setting up in the electric tuning arrangement) having the highest frequency and carefully note the program which it is broadcasting. Then, rotate the Range Switch control knob to the electric tuning position (arrow on knob pointing in direction of the star).
7. With the electric tuning escutcheon plate removed from the cabinet, push in the push button for the station having the highest frequency (provided, of course, that the station chosen has a frequency which is within the assigned frequency limits for this button).
8. Looking in on the electric tuning unit rotate, by means of a small screw-driver, the screw of the oscillator (OSC.) tuning adjustment which is designated 1560 to 1030 kilocycles, to the position where the desired station is received.

   IMPORTANT: When setting up any stations on the electric tuning unit always rotate the screw of the particular push button section being adjusted until the desired station is obtained; then, carefully readjust this screw to the position midway between the points where the quality becomes poor or the signal disappears. This setting reduces the amount of background noise and gives the fine quality of reproduction of which this receiver is capable.
9. When the oscillator tuning adjustment has been properly made as mentioned in paragraph 8 above, the screw of the antenna (ANT.) tuning adjustment designated 1560 to 1030 kilocycles should be rotated until maximum signal is obtained. In making this adjustment the same procedure as mentioned under "Important", in paragraph 8 above, should be followed.

When these adjustments have been properly made, the station having the highest frequency is correctly set up for electric tuning selection.

10. Now proceed to set up the remaining five chosen stations in the same careful manner as was done for the station having the highest frequency mentioned in paragraphs 8 and 9 above, proceeding according to the frequency of the remaining stations.

OPERATION

Controls

The push buttons for electric tuning are located near the top or towards the side (dependent upon the cabinet style) of the front of the cabinet and the four control knobs, with their functions indicated, are also located on the front of the cabinet as shown in Figure 1.

In order to simplify the marking on the dial and allow for comparatively large easily read figures, both tuning ranges are given in megacycles. One megacycle equals 1000 kilocycles so that by mentally placing the decimal point three positions to the right, any megacycle marking can be converted to kilocycles. For example, the 65 (megacycles) designation on the Standard Broadcast Scale of the dial becomes 650 kilocycles.

Procedure

The No. 325 Receiver is so designed that simplicity and ease of operation are easily obtainable on both of its tuning ranges. The full possibilities of any receiver designed for reception of short waves cannot be realized unless the user has a practical knowledge of short wave transmission characteristics. Therefore, it is recommended that a good up-to-date transmitting schedule for the most important short wave stations be obtained and consulted. These transmitting schedules vary from season to season but good tabulations can be found in newspapers and in current magazines on short wave reception which your dealer can recommend.

The following is a brief outline of the operating procedure for radio reception:

1. Rotate the "Off-On-Tone" control knob from its maximum counter-clockwise position, slightly clockwise (to the right) from this position which turns the set "on" (indicated by illumination of the dial providing the arrow on the Range Switch control knob is pointing in the directions of the letters BR. or S-W). Wait a few seconds for the tubes to reach operating temperature.
2. Set the Range Switch for the frequency range in which the desired station is located. If the desired station is located in the "Standard Broadcast" range, set the range switch control knob so that the arrow points in the direction of the letters BR., or if the station (located in the "Standard Broadcast" range) has previously been set up for electric tuning, this knob should be rotated so that the arrow points in the direction of the star.

   If the desired station is located in the "Short Wave" range, rotate the knob so that the arrow points in the direction of the letters S-W.
3. Rotate the Volume Control knob in a clockwise direction for about three-quarters of its rotation.
4. To select one of the six stations previously set up in the electric tuning arrangement, after the Range Switch control knob has been set to the electric tuning position (arrow on knob pointing in direction of star), simply push in the button associated with the station letters of the desired station. When any one button is pushed in, it should lock in the depressed position until another button is pressed. **Never press two buttons at the same time.**
5. If the receiver is to be tuned manually, rotate the Station Selector knob to set the dial pointer to the position for the listed frequency of the desired station; then, move the dial pointer by means of the Station Selector knob, **very slowly** over a short range either side of this setting. If nothing is heard, rotate the Volume control knob in a farther clockwise direction and repeat the above tuning process.

   IMPORTANT: This tuning procedure is extremely important particularly for short wave reception. As the short wave tuning range covers a wide band of frequencies, tuning is very sharp and critical. Therefore, a signal of usable strength will often be imperceptible if "tuned through" rapidly or carelessly. A little practice in tuning the short wave stations will illustrate this point clearly. Start tuning in the short wave range by selecting "local" stations or those with strong signals in your locality and note their assigned frequency. From these points as reference you can hunt for the weaker or more distant stations.

   In tuning a distant short wave station, select the time at which the station is scheduled to transmit and the band in which the station is located (16, 19, 25, 31, or 49 meters). Then, tune **slowly** over this band until a slight "hiss" is heard, and carefully retune on this hiss to

bring up any modulation (speech or music) that may be present. A good distant station to practice selecting is GSB in England. This station has a frequency of 9510 kc. (9.51 mc.) or a wavelength of 31.55 meters. It is, therefore, located in the 31 meter band. The most desirable time to tune in this station is in the afternoon (in the Eastern Standard Time Zone).

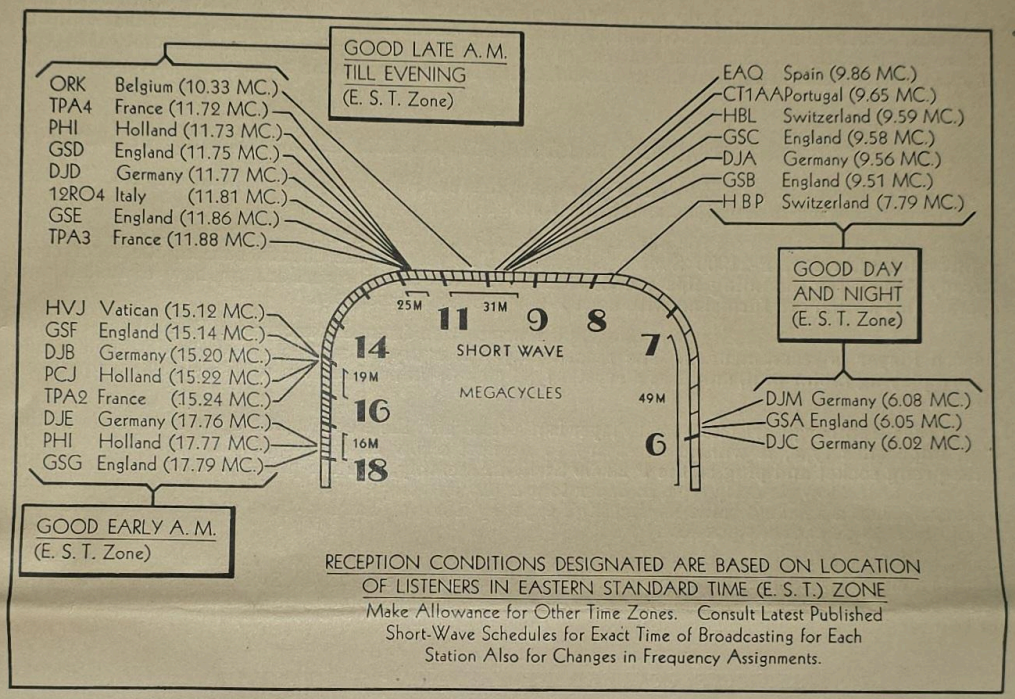

Fig. 2. Location of European Short Wave Stations on Tuning Dial with Schedule of Best Receiving Time for Each Frequency Group.

By following the above procedure you should be able to locate this station, assuming, of course, suitable antenna and favorable weather conditions. See Figure 2, for locations of European short wave stations on the No. 325 Receiver's dial, and the time of day when these stations are received best.

6. After receiving the signal, if the receiver has been tuned manually, rotate the Volume control knob in a counter-clockwise direction until the signal is reduced to a low level. Now, readjust the Station Selector knob accurately to a position midway between the points where the quality becomes poor or the signal disappears. **This setting reduces the amount of background noise and gives the fine quality of reproduction of which this receiver is capable.**

7. Due to the effect of heating up the apparatus, it may be necessary to occasionally retune short wave stations slightly for the first half hour of operation, in order to keep the audio quality satisfactory.

8. Adjust the Volume control for the desired volume level. The automatic volume control circuit built into this instrument maintains the volume level substantially constant irrespective of normal fluctuations of signal strength (fading). All stations with good signal strength will, therefore, be received at approximately the same volume without readjustment of the Volume control.

9. If decreased treble response is desired, rotate the "Off-On-Tone" control knob in a farther clockwise direction from the "on" position of this control. This same procedure is followed to reduce excessive noise interference.

10. To turn the receiver "Off", simply rotate the "Off-On-Tone" control knob to its maximum

counter-clockwise position (dial illumination ceases if the Range Switch control knob has been set to either the BR. or S-W position).

Dial Lamps

There is one dial lamp bulb employed to illuminate the dial of these receivers. In case this lamp burns out replace it with a Stromberg-Carlson, P-28025 Radio Dial Lamp. This dial lamp is visible and is easily reached from the rear of the cabinet. The lamp is mounted in a removable type of socket, which can be slipped off its mounting lug for convenience in removing and replacing the lamp.

PROCEDURE FOR OBTAINING REPRODUCTION FROM PHONOGRAPH RECORDS

In order to obtain reproduction of phonograph records in conjunction with the No. 325 Receiver, the following instructions should be followed.

To equip these receivers for phonograph operation, it will be necessary to purchase and install a Stromberg-Carlson, P-28909 Switch Assembly. The rear of the chassis base of the receiver is already drilled for mounting this switch assembly. Complete instructions on how to install and operate this switch are furnished with each P-28909 Switch Assembly.

To obtain the best quality of phonograph reproduction from this receiver, a Stromberg-Carlson Record Player is recommended. The record player is equipped with a correctly designed single record playing motor unit, and uses a crystal type pick-up in conjunction with a specially equalized circuit.

If the Stromberg-Carlson Record Player is not used and the electric pick-up to be used is of the high impedance type, it will be necessary to connect a low capacity shielded cable between the three-prong socket and plug of the P-28909 Switch Assembly, and the pick-up. This shielded cable should be of the low capacity type, in order to prevent excessive cutting of high frequencies which is caused when a shielded cable having high capacity is used. The length of the shielded cable used should be kept as short as possible.

If a pick-up of the low impedance type is used, it will be necessary to connect a "matching transformer" between the three-prong socket and plug of the P-28909 Switch Assembly, and the pick-up. The transformer should be located as near to the receiver as possible, in which case it will not be necessary to use a shielded cable.

SERVICES COVERED BY THE NO. 325 RECEIVER

Following is a list of the types of services that can be received on this receiver, together with statements as to their value to the average listener.

(a) Standard Broadcasts

The standard broadcast band on the American Continents is between 540 kc. and 1600 kc. The broadcasts in this range give regularly scheduled, reliable service with valuable entertainment, educational material, news, etc.

(b) Short Wave Broadcasts

Most of the short wave broadcast stations operate in one or more of the five bands known as the 16, 19, 25, 31 and 49 meter bands. Some operate at different frequencies in day and night, using the higher frequency in the daytime. There are a considerable number of foreign short wave broadcast stations but the following are in general the most reliable to receive:

Daventry, England	Zeesen, Germany
Pontoise, France	Rome, Italy

In addition to these, there are a number of South American stations which are quite reliable.

Some of the American and Canadian programs of regular broadcast stations are sent out on short waves and in some locations and at certain hours it may be possible to receive the short waves better than the standard broadcasts. Most of these stations provide a regular scheduled service of programs similar to that of the standard broadcast bands.

(c) Police Radio Stations

The transmission from some of these stations are located in one narrow band in this receiver, 1.6 to 1.7 megacycles. This service is confidential in nature and is intended only for authorized police use. Steps are being considered by governing authorities to protect this service.

(d) Amateur Phone Stations

The transmission from some of these stations will be received in one band in this receiver; namely, 14.15 to 14.25 megacycles. Amateur radio is a hobby for many thousands and naturally these bands are overcrowded. Therefore, there is considerable interference and no entertainment features or regular scheduled programs are heard in this band.

(e) Commercial Phone Stations

Regular short wave radio telephone service is maintained between many of the larger countries of the world. One-half of a conversation often can be heard; however, it is customary to render the speech unintelligible by "garbling" electrically, for purposes of secrecy. Such garbled speech sounds high pitched, with no recognizable sounds.

(f) Ship and Experimental Phone Stations

A ship to shore radio telephone service is maintained on some of the larger passenger liners. These stations operate over a wide range of frequency assignments, dependent on conditions. Occasionally, one-half of a private conversation can be picked up on these channels.

(g) Code Stations

These dot-dash transmissions will be heard in many places in the tuning ranges of this receiver and will "come in" with different types of sounds. This type of transmission should not be confused with interference from electrical systems or automobiles. Code transmissions can be tuned-in or out sharply while local electrical interference usually spreads over the whole dial. To those not acquainted with the telegraph code, this type of signal has only one value, that of indicating that the short wave receiver is operating correctly in the particular section of the tuning scale.

(h) Harmonics of Local Broadcast Stations

In some cases the higher frequency harmonics (multiples of assigned frequency) of broadcast stations will be picked up and possibly mistaken for short wave broadcast stations. However, this error will be rectified when the station signs off. In all such cases the spurious reception is the result of actual signals transmitted from broadcast stations, and is not due to defective operation of the short wave receiver. By listening on the standard broadcast band for the same program material, the station transmitting the "Harmonics" can be ascertained and in the future reception of such programs (harmonics) on the particular division of the short wave dial will be recognized.

Stromberg-Carlson

Postage
Stamp
Here

Stromberg-Carlson Telephone Mfg. Co.,

100 Carlson Road

Rochester, N. Y.

Warranty Registry Department

NOTICE

These Warranty forms are the property of the Stromberg-Carlson Telephone Manufacturing Company, to be returned upon demand. They are furnished for use only by duly authorized Stromberg-Carlson Franchised Dealers.

Their use by others is prohibited and illegal.

WARRANTY ON STROMBERG-CARLSON RADIO RECEIVERS

_____, of _____, _____
(Name of Purchaser) (Street Address) (City)

has this day purchased from the undersigned, the following Radio Receiver: Code No. _____ Serial No. _____

This Receiver was manufactured by the Stromberg-Carlson Telephone Manufacturing Company of Rochester, N. Y., whose warranty covering same is as follows:

WARRANTY

We warrant each new radio receiver manufactured by us to be free from defects in material and workmanship under normal use and service, our obligation under this warranty being limited to making good at our factory any part or parts thereof which shall, within ninety (90) days after delivery of such receiver to the original purchaser, be returned to us with transportation charges prepaid, and which our examination shall disclose to our satisfaction to have been thus defective, this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on our part, and we neither assume nor authorize any representative or other person to assume for us any other obligation in connection with the sale of our receivers.

This warranty shall not apply to any receiver which shall have been repaired or altered outside of our factory in any way so as, in our judgment, to affect its stability or reliability, nor which has been subject to misuse, negligence or accident, nor which has had the serial number altered, defaced or removed. Neither shall this warranty apply to any receiver which has been connected otherwise than in accordance with the instructions furnished by us.

We make no warranty whatever in respect to tubes, or other accessories not manufactured by us, inasmuch as they are usually warranted by their respective manufacturers.

THIS WARRANTY IS LIMITED TO THE ORIGINAL PURCHASER OF A NEW RECEIVER FROM AN AUTHORIZED STROMBERG-CARLSON DEALER WHO HAS OBTAINED THE RECEIVER DIRECT FROM THE STROMBERG-CARLSON FACTORY.

Subject to the above conditions, this warranty shall become effective only when this form has been issued and countersigned by an authorized Stromberg-Carlson dealer and when the receiver covered hereby is registered at the factory by the original purchaser.

STROMBERG-CARLSON TELEPHONE MANUFACTURING CO.

W. H. Angle
President.

The undersigned hereby certifies that he is an authorized Stromberg-Carlson dealer and that the radio receiver listed above is new apparatus obtained direct from the Stromberg-Carlson factory and that the purchaser above specified is the original purchaser thereof.

_____ _____
(Dealer's Store Address) *(Dealer.)*

P-16546 Form No. 1205

(Owner to detach and mail this card to the Stromberg-Carlson Factory)

Serial No. _____

REGISTRY CARD

Date _____

Gentlemen:

I have just purchased a Stromberg-Carlson Radio Receiver, Code No. _____, bearing the above serial number from

Dealer's Name _____

Dealer's Address _____

I hold warranty countersigned by the above as a duly authorized Stromberg-Carlson Dealer and request your validating this warranty by its registration.

Owner's Name _____

Address _____

DEALER'S RECORD CARD

SERIAL NO. _____
CODE No. _____
CUSTOMER:
INSTALLED: ADDRESS:
DATE

ACCESSORIES
Kind of Aerial
Tubes
ACCESSORIES

Remarks

Dealer to Detach and Retain This Card

	Date of Call	O.K.	CUSTOMER CONTACT CHART Trouble and what remedy was charged	Initials of Service Man
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				